## REMARKS

This Amendment is in response to the Office Action dated January 18, 2005. In the Office Action, the Examiner rejected claims 1-3, 5, 13, 14, 20-23, 26, 27, 32, 35, 36, 41, 44, 45, 50, 53, and 55 under 35 U.S.C. § 102(e) as being anticipated by Wu et al., WO 01/15451 A1 (hereinafter *Wu*). Claims 25, 54, and 56 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu*. Claims 4, 28, 37, and 46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of Katayama, U.S. Patent No. 6,349,321. Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of Bertram et al., U.S. Publication No. 2003/0103532 A1. Claims 6-12, 15-19, 29-31, 33, 34, 38-40, 42, 43, 47-49, 51, and 52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wu* in view of Herz, U.S. Patent No. 6,088,722 A1.

Claims 1, 19, 26, 34, 35, 43, 44 and 52 are amended as shown above. Specifically, independent claims 1, 26, 35, and 44 are amended to more clearly recite features of the claimed invention. No claims are cancelled herein. Claims 1-56 remain pending in the application. For the reasons set forth below, the Applicants respectfully request reconsideration and allowance of all pending claims.

Argument in Support of Allowance of Claims over Rejections under 35 U.S.C. § 102

A claim is anticipated only if each and every element of the claim is found in a single reference. M.P.E.P § 2131 (citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the claim." M.P.E.P. § 2131 (citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1989)).

Claims 1-3, 5, 13, 14, 20-23, 26, 27, 32, 35, 36, 41, 44, 45, 50, 53, and 55 under 35 U.S.C. § 102(e) as being anticipated by *Wu*. Independent claims 1, 26, 35, and 44 have been amended to more clearly recite features of the claimed invention. In particular, these claims have been amended to make it very clear that the metadata that

are broadcast pertain to pieces of content that are in consideration for inclusion in upcoming, *yet to be scheduled,* broadcasts.

For example, independent claim 1, as amended, recites.

1. A method for generating an opportunistic broadcast schedule, comprising:

broadcasting meta-data to a plurality of client systems, the meta-data including descriptions of a plurality of pieces of content that are *in consideration for inclusion in upcoming, yet to be scheduled, broadcasts*;

receiving individual sets of client demand feedback data from at least a portion of said plurality of client systems, each individual set of client demand feedback data comprising data indicating a client interest level in at least a portion of the plurality of pieces of content;

determining a piece of content from among said plurality of pieces of content that is most opportunistic for a next broadcast by aggregating the individual sets of client demand feedback data; and

scheduling the piece of content that is determined to be most opportunistic to broadcast for a next broadcast. (Emphasis added)

*Wu* discloses a method for providing a personalized video channel. As illustrated in Figure 1, programming segments available from broadcast streams 112 on a digital television system are combined together with programming provided over additional on demand streams 116. As stated in the abstract,

> The system allows the limited bandwidth of digital television systems such as digital cable or digital satellite to be used to support more flexible programming based on user requests. A portion of the bandwidth of the digital television system is set aside as on demand streams for user requested programming. The user selects programs of interest and the shows are recorded either when broadcast or when the requested program is transmitted over an on demand stream.

*Wu* also discloses a method for scheduling the use of the on demand streams according to requests. This allows the usage of the on demand streams to provide the most requested programming not available on the broadcast streams. More

specifically, the on demand streams are determined in response to user inputs entered via an input 126 to a set top box 102 that drives a display 100. A process flow for defining a personalized stream is shown in Figure 2. A corresponding description begins at the heading "C. Personalized Stream" at the top of page 10.

The process begins at a step 400, with a list and/or grid of available segments being presented to a user via display 100. Programs that are not part of the broadcast streams 114 can be selected from a list of available audio/video sources (e.g., the contents of the audio/video source 124). Free form requests can also be accommodated by providing a field for typing titles of segments. This information may be entered via a keyboard displayed on display 100 or via input 126. In response to a free form request, the computer 122 could provide matching programs and/or recommendations over the data channel 118.

At step 402, the user selects the desired segments from the grid/list via input 126. In response, for each segment requested by the user, a determination is made at step 404 as to whether the segment is a broadcast segment or an on demand segment. Broadcast segments are segments that have a predetermined time and associated stream. In contrast, there are no pre-assigned streams associated with on demand segments.

If the segment is a broadcast segment, the set top box 102 is set to record the segment when it is scheduled to be broadcast, as depicted at step 406. If the segment is an on demand segment, a request is sent over the data channel 118 to receive the on demand segment, at step 408. Later, when the program is scheduled by the computer 122, the set top box 102 will be set to record the segment when it is available. In some embodiments, the on demand segments are scheduled on a first come-first served basis and the computer 122 will return a time and a stream identifier for the segment shortly after the request. In other embodiments, the requests are aggregated over a predetermined period, and then the programming choices are made.

Figure 3 shows a method employed by *Wu* for scheduling the on demand streams. This is also generally discussed in the second beginning with the heading "D. Scheduling the On Demand Streams" on page 12. First, at step 500, requests are received for the segments over data channel 118 on the computer 122. Requests are received for varying predetermined periods, depending on the number of demand streams 116, or other factors. At step 502, the requests are ranked based on demand. The example rankings shown in Table 1 are based solely on the number requests for specific segments.

Next, at step 504, the rankings are used to schedule the transmissions of segments over the on demand streams 116. The *S* highest ranking segments are shown first on *S* on demand streams 116. When those segments are finished, the next highest ranking segments are shown, and so on. Other ranking systems are also briefly discussed, including bandwidth requirements.

With respect to rejection of original claim 1, the Examiner states,

Wu discloses a method for generating an opportunistic broadcast schedule, comprising:

broadcasting meta-data to a plurality of client systems, the meta-data including descriptions of a plurality of pieces of content, e.g., information of program, that are in consideration for upcoming broadcasts (see page 8, lines 1-5 and page 9, lines 2-6).

Page 8, lines 1-5 recite,

The set top box 102 decodes video streams being played either form the stream source 112 or the memory 104 and displays them on the display 100. Additionally, the set top box 102 can add menus and status information to the display 100.

Meanwhile, page 9, lines 2-6 recite,

Other menu options, might provide future schedules and one touch recording requests. For example, a list and/or grid of future program/segments could be shown and a signal from the input 126 could set the program/segment to record.

*Wu* does not disclose, teach, or suggest the use of broadcasting meta-data including descriptions of pieces of content that are up for consideration to be potentially

included in future, yet to be scheduled, broadcasts. More specifically, *Wu* does not broadcast meta-data for any purpose. With respect *to* how the information to build the future program/segment selection list/grid is provided to the set-top box, *Wu* states, "The computer 122 can also provide the **schedule** *for both the broadcast streams 114 and the on demand streams 116* over the data channel 118" (page 7, lines 9-10). Thus, this information is sent over data channel 118, which is depicted as a bi-directional channel in Figure 1 to support communication between computer 122 and set top box 102. Under conventional practices, this information would be downloaded to set top box 102 using a telephone line connection which serves as the bi-directional channel. Such a configuration (use of a telephone return) is described at page 4, lines 10-13. This clearly is not a broadcast of data of any sort.

Furthermore, the information that *Wu* displays relates to <u>already-scheduled</u> future broadcasts. This is akin to an electronic program guide (EPG), which is a well-known way to present broadcast scheduling information to a user via electronic display of such information on a TV screen or monitor. Notably, an EPG provides information relating to <u>already-scheduled</u> content. By means of the EPG, a user is enabled to review the broadcast schedule for future broadcasts, allowing the user to select a particular piece of content for recording.

In sharp contrast, the meta-data recited in each of the independent claims of the present application pertain to pieces of content that are in consideration for inclusion in upcoming, **yet to be scheduled**, broadcasts, as discussed above. This is not taught or fairly suggested by *Wu*. Importantly, the broadcasting of an EPG as might be disclosed in another prior art reference (as might be potentially used to form a future obviousness rejection) also does not read on this claim limitation. Thus, such an obviousness rejection would be improper.

In further detail, the present invention pertains to methods, apparatus, and systems for generating an opportunistic broadcast schedule based on distributed client

feedback. Overall aspects of one embodiment of the method and system operations are generally shown in the process flow diagram of Figure 3. The overall scheme enables a broadcast operator, such as a cable system operator or satellite system operator, for example, to optimize its broadcast bandwidth in a manner that best fulfills content demanded by various recipients of the broadcast.

As an overview, it is desired by the broadcast operator to broadcast programs, such as movies and television shows, for example, that best match the demands of broadcast subscribers. To meet this purpose, the broadcast operator sends out (broadcasts) data that describes characteristics of programming (referred to as pieces of content) that the broadcast operator is considering for inclusion in future, upcoming broadcasts. At this point in time, the pieces of content in the upcoming broadcast have yet to be scheduled, since the pieces of content to be included in these future broadcasts have yet to be identified. The data, referred to as "meta-data", includes descriptors and attributes of the pieces of content that are up for consideration for upcoming broadcasts. For example, the meta-data may include program names, major actors and actresses, genre, etc. In essence, the meta-data are used to characterize various aspects of each program. The meta-data are received at client systems that are configured to receive the meta-data broadcast. In one embodiment, a meta-data broadcast schedule is first broadcast to tell the client systems to "listen for" the meta-data (e.g., tune to a particular channel to receive the meta-data during a scheduled time).

In response to receiving the metadata, the client systems process the meta-data to generate client demand feedback data. The feedback data may be generated by user rating and rankings, as well as by automatically generated ratings in rankings based on previously viewed pieces of content using a combination of the newly received meta-data and existing meta-data already stored on the client corresponding to the previously viewed content. Upon being generated, the client demand feedback data is

returned to the broadcast operations center by various means, such as a back-channel or the like.

In connection with the foregoing activities being performed at multiple client systems, client demand feedback data is received from multiple client systems. This feedback data is aggregated to identify which pieces of content that are being considered for upcoming broadcasts have the greatest demand. A broadcast schedule queue containing an ordered list of the pieces of content, based on demand, is maintained, with the pieces of content with the highest demand placed at the top of the queue. A piece of content is periodically selected from the top of the broadcast schedule queue to be broadcast during a next broadcast schedule window. Once a piece of content is broadcast, its previous demand rating data are cleared, and it is moved to the bottom of the queue.

During a given broadcast schedule window, one or more pieces of content are broadcast to the client systems. The client systems provide a mechanism (a content rating table) for determining whether or not to capture and store each piece of content that is broadcast. In response to a user access of a piece of content, a meta-data table and the content rating table are updated.

In summary, it is clear that *Wu* does not teach or fairly suggest each and every limitation recited in independent claims 1, 26, 35, and 44. Accordingly, each of these claims is patentable over *Wu*. Furthermore, the dependent claims that depend directly or indirectly on these independent claims are likewise allowable based on at least the same reasons and based on the recitations contained in each dependent claim.

If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to the allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.

*Charge Deposit Account*

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

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